UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,743	12/07/2005	Yoshiyuki Suetsugu	28955.1062	5935

27890 7590 11/25/2009

STEPTOE & JOHNSON LLP
1330 CONNECTICUT AVENUE, N.W.
WASHINGTON, DC 20036

EXAMINER	
EWALD, MARIA VERONICA	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
11/25/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/559,743	Applicant(s) SUETSUGU ET AL.	
	Examiner MARIA VERONICA D. EWALD	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

13. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 29, 2009 has been entered.

Specification

14. The disclosure is objected to because of the following informalities: several pages of the specification identify the claims. For example, page 5, lines 13 – 15 state "Concretely, an ultrasonic vibration applying apparatus according to *claim 1* is an ultrasonic vibration applying apparatus which applies an ultrasonic vibration to a resin material in a molten state…" It is not proper to reference the claims in the specification and thus, appropriate correction is required.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 7 – 10, 12 – 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. (U.S. 5,284,625) in view of Schembri (U.S. 5,403,415). Isayev, et al. teach an apparatus of applying ultrasonic vibration to a resin material, which applies the ultrasonic vibration to the resin material in a molten state, the apparatus comprising: a vibrator which applies ultrasonic vibration to a resin material, or a vibration transmission member which transmits the vibration of the vibrator to the resin material (item 15 – figure 1), wherein the vibrator or the vibration transmission member is located in a channel of a flowing molten in contact with the resin material (figures 1 – 8) and the vibrator or the vibration transmission member is positioned to transmit vibration in a direction perpendicular to a flow direction of the flowing molten resin material (figures 4 – 6); and vibration transmission inhibition means is positioned to substantially inhibit members other than the resin material from being vibrated by the vibration of the vibrator or the vibration transmission member (item 52 – figure 14; column 9, lines 15 – 22); wherein the vibration transmission inhibition means is an elastic member interposed between the vibrating member or the vibration transmission member and the other member (item 52 – figure 14; column 9, lines 15 – 22); wherein the vibration transmission inhibition means is a gap interposed between the vibrating member or the vibration transmission member and the other member (figures 1 and 14); wherein a size of the gap is set to 0.05 mm or more and 0.5 mm or less (column 9, lines 40 – 43).

Isayev, et al. further teach that the vibrator or the vibration transmission member is a horn having any shape of a columnar shape, plate shape, ring shape, circular cone shape, truncated cone shape, conical shape, exponential shape, rectangular parallelepiped shape, cube shape, and a shape in which a slit cut or flange is formed on any of these shapes (figure 1); wherein the plurality of horns of arranged in series or in parallel along the channel (figures 4 – 8; column 7, lines 55 – 69); wherein the plurality of horns are arranged around the channel and the vibration is applied to the resin material from different directions (figures 4 – 8); wherein the channel is formed in one of a cylinder of an extrusion machine or an injection molding machine, a cylinder of an extruder or a kneader, a chamber a downstream side from an outlet of the cylinder and a mold (figure 1; column 6, lines 60 – 68); wherein the resin material is one of a mixture of two or more resins and/or elastomers, and a mixture of a resin and/or an elastomer and a filler (column 3, lines 5 – 25); wherein a resin composition is produced using the apparatus (column 3, lines 5 – 25).

Isayev, et al. also teach a method of kneading, compounding and blending a resin material comprising the steps of: disposing the ultrasonic vibration applying apparatus in a channel through which the resin material having a molten state flows (figure 1; column 7, lines 5 – 15); and applying the ultrasonic vibration to the resin material which flows through the channel from a direction crossing a flow direction of the resin material at right angles (figures 4 – 8); the application of the ultrasonic vibration through the vibrator or the vibration transmission member being performed under conditions that members other than the vibrator or vibration transmission member are

not substantially vibrated (figure 14); and wherein an end surface of the vibrator or the vibration transmission member constitutes a part of the channel for flowing molten resin material (figures 4 – 8).

With respect to the end surface of the vibrator forming a part of the channel for flowing molten resin material, Isayev, et al. teach a plurality of configurations wherein the horn tip or end surface contacts the die end surface where the resin flows and thus, the vibrator forms a part of the channel for flowing molten resin material.

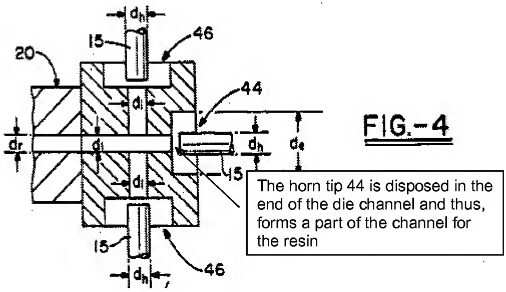


FIG.-4

Isayev, et al., however, do not specifically teach that vibrator or the vibration transmission member has high adhesive properties to the resin material. Fabricating a vibration transmission member such as the sonotrode tip or the horn with high adhesive properties to the resin; however, is known.

For example, Schembri teaches an ultrasonic welding horn used to melt and thereafter bond thermoplastic resin surfaces to one another. The surface of the horn has been modified to produce a uniform distribution of energy to the portions contacting

the horn tip. Typical horn surfaces are flat-energy applying surfaces, which results in uneven welding or distribution of ultrasonic energy (column 3, lines 1 – 5). The use of ultrasonic horns with flat surfaces resulted in excess plastic flow while other regions did not receive adequate energy. Therefore, to promote an affinity for the thermoplastic parts, the ultrasonic horn is modified with raised co-planar surfaces, thereby effecting distribution of the energy to the parts being contacted by the horn (column 3, lines 10 – 15). Similarly, the horn's raised surfaces may be produced with a thermoplastic film, which readily transmits energy to the surfaces being welded (column 3, lines 30 – 35). The film may also be applied by one of numerous film deposition techniques including CVD or vacuum deposition (column 3, lines 58 – 60). The horn may also be modified by etching a pattern in the surface, thereby further defining the raised surfaces and enhancing energy transfer (column 3, lines 62 – 68). Thus, Schembri teaches the modification of the ultrasonic horn surface to improve the affinity of the horn to the thermoplastic being worked upon.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the ultrasonic horn of Isayev, et al. with the surface improvement components and methods of Schembri for the purpose of improving the affinity of the horn surface to the thermoplastic, thereby effectively transmitting the energy to the regions requiring such energy, such that the plastics are bonded to one another, while minimizing any excess plastic flows, as taught by Schembri.

With respect to claim 18, the Examiner is noting that a resin composition is claimed as being made by the apparatus with the structural components of claim 1. The resin composition in and of itself *is not a novel product* and as such, the apparatus as claimed is fully capable of producing such compositions as stated in the rejection above. Furthermore, as evidenced by the primary reference of Isayev, et al., Isayev, et al. do teach that a resin composition is produced by the apparatus (column 6, lines 35 – 50).

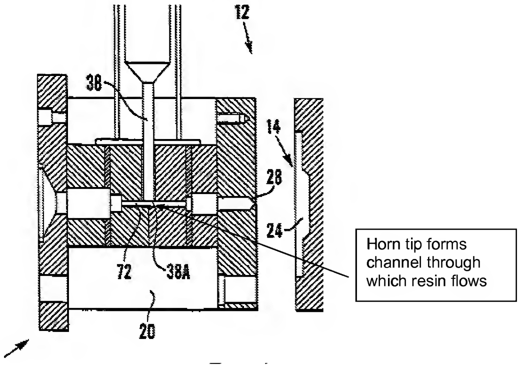
Claims 1 and 4 – 5, 7, 9 – 10, 12, 15 – 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allan, et al. (U.S. 2006/0165832 A1) in view of Schembri. Allan, et al. teach an apparatus of applying ultrasonic vibration to a resin material, which applies the ultrasonic vibration to the resin material in a molten state, the apparatus comprising: a vibrator which applies ultrasonic vibration to a resin material, or a vibration transmission member which transmits vibration of the vibrator to a resin material (item 34 – figure 1), wherein the vibrator or the vibration transmission member is located in a channel of a flowing molten resin material in contact with the resin material (figure 1; paragraph 0010); and the vibrator or the vibration transmission member is positioned to transmit vibration in a direction perpendicular to a flow direction of the flowing molten resin material (figures 1 – 3, 5 and 7); and vibration transmission inhibition means is positioned to substantially inhibit members other than the resin material from being vibrated by the vibration of the vibrator or the vibration transmission member (item 40 – figure 1; paragraph 0039); wherein the vibration transmission inhibition means is an elastic member interposed between the vibrating member or the

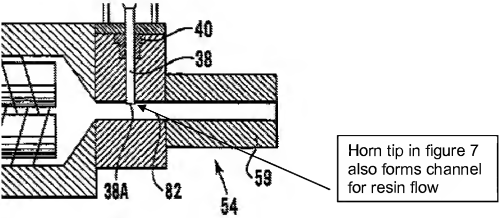
vibration transmission member and the other member (item 40 – figure 1; paragraph 0039); wherein a connecting portion which connects the vibrating member or the vibration transmission member to the other member is progressively formed in a position corresponding to a node portion of the vibration transmitted inside the vibrating member or the vibration transmission member, and the elastic member is interposed between the connecting portion and the other member (figures 1 and 2).

Allan, et al. also teach that the vibration transmission inhibition means is a gap interposed between the vibrating member or the vibration transmission member and the other member (figure 1); wherein the vibrator or the vibration transmission member is a horn having any shape of a columnar shape, plate shape, ring shape, circular cone shape, truncated cone shape, conical shape, exponential shape, rectangular parallelepiped shape, cube shape, and a shape in which a slit cut or flange is formed on any of these shapes (figure 1); wherein the channel is formed in one of a cylinder of an extrusion machine or an injection molding machine, a cylinder of an extruder or a kneader, a chamber a downstream side from an outlet of the cylinder and a mold (figures 1 – 5; paragraphs 0001 and 0015); wherein the resin material is one of a mixture of two or more resins and/or elastomers, and a mixture of a resin and/or an elastomer and a filler (paragraphs 0001 – 0003); wherein a resin composition is produced using the apparatus (paragraphs 0001 – 0003).

Furthermore, Allan, et al. teach a method of kneading, compounding and blending a resin material comprising the steps of: disposing the ultrasonic vibration applying apparatus in a channel through which the resin material having a molten state

flows (figure 1; paragraph 0001); and applying the ultrasonic vibration to the resin material which flows through the channel from a direction crossing a flow direction of the resin material at right angles (figures 1 – 5); the application of the ultrasonic vibration through the vibrator or the vibration transmission member being performed under conditions that members other than the vibrator or vibration transmission member are not substantially vibrated (paragraph 0039) and wherein an end surface of the vibrator or the vibration transmission member constitutes a part of the channel for flowing molten resin material (figure 4 and 6 – 7). Because the resin must flow around the vibrator and past its end tip to reach the outlet (item 28 – figure 4), the vibrator tip forms a part of the channel. Furthermore, figures 6 – 7 clearly show that the vibrator tip is configured to close off the flow path of the resin and this forms a part of the flow channel for the flowing molten resin material.





Allan, et al., however, do not specifically teach that vibrator or the vibration transmission member has high adhesive properties to the resin material. Fabricating a vibration transmission member such as the sonotrode tip or the horn with high adhesive properties to the resin; however, is known.

For example, Schembri teaches an ultrasonic welding horn used to melt and thereafter bond thermoplastic resin surfaces to one another. The surface of the horn has been modified to produce a uniform distribution of energy to the portions contacting the horn tip. Typical horn surfaces are flat-energy applying surfaces, which results in uneven welding or distribution of ultrasonic energy (column 3, lines 1 – 5). The use of ultrasonic horns with flat surfaces resulted in excess plastic flow while other regions did not receive adequate energy. Therefore, to promote an affinity for the thermoplastic parts, the ultrasonic horn is modified with raised co-planar surfaces, thereby effecting distribution of the energy to the parts being contacted by the horn (column 3, lines 10 – 15). Similarly, the horn's raised surfaces may be produced with a thermoplastic film, which readily transmits energy to the surfaces being welded (column 3, lines 30 – 35). The film may also be applied by one of numerous film deposition techniques including

CVD or vacuum deposition (column 3, lines 58 – 60). The horn may also be modified by etching a pattern in the surface, thereby further defining the raised surfaces and enhancing energy transfer (column 3, lines 62 – 68). Thus, Schembri teaches the modification of the ultrasonic horn surface to improve the affinity of the horn to the thermoplastic being worked upon.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the ultrasonic horn of Allan, et al. with the surface improvement components and methods of Schembri for the purpose of improving the affinity of the horn surface to the thermoplastic, thereby effectively transmitting the energy to the regions requiring such energy, such that the plastics are bonded to one another, while minimizing any excess plastic flows, as taught by Schembri.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. or Allan, et al. in view of Schembri. Isayev, et al., Allan, et al. and Schembri teach the characteristics previously described but do not specifically teach that the elasticity of the vibrating member relative (Eh) to the elastic member (E) is such that 0.3Eh > E.

However, this is obvious and is within the level of one of ordinary skill in the art. The elastic member used by both Isayev, et al. and Allan, et al. is a Teflon gasket, while the ultrasonic horn is metal. The modulus of elasticity is defined as the stiffness of the material or the degree to which it deforms. Teflon will deform more readily and thus, its modulus of elasticity (or measure of stiffness) is lower than the metal horn, which is

more rigid and thus, its modulus of elasticity is higher. Furthermore, depending on the metal chosen, it is obvious that at some point 0.3Eh>E.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to ensure that Eh of the vibrating member is related to E of the elastic member such that 0.3Eh>E for the purpose of ensuring that the elastic member deforms more readily, able to absorb the vibrations transmitted to it without transmitting such vibrations to the other member, which in turn ensures that only the resin is vibrated.

Claim 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. or Allan, et al., in view of Schembri and further in view of Rice (U.S. 5,269,860). Isayev, et al., Allan, et al. and Schembri teach the characteristics previously described but do not specifically teach that the adhesive properties improver is maleic anhydride or a composition of malefic acid.

In a method to ultrasonically bond thermoplastic to fibers, Rice teaches the use of an ultrasonic horn to weld thermoplastic sheets to a fibrous textile surface. The ultrasonic horn used has a tip surface, which is shaped to follow the contour of the sheet being bonded (column 4, lines 20 – 30). The contour may be curved, round, solid or tubular (column 4, lines 20 – 30). Furthermore, Rice teaches that the use of maleic anhydride-based polymers (amorphous crystals) effectively transmit the ultrasonic energy due to their random molecular arrangement and thus, are appropriate to use when bonded to a non-thermoplastic fiber (column 2, lines 60 – 69; column 3, lines 1 –

10, 20 – 26). This suggests that the surface of the vibration transmission member or vibrator be subjected to surface treatment wherein the treatment is the formation of grooves or a concave/convex surface and wherein the adhesive improver is maleic anhydride.

Thus, it would have been obvious to one of ordinary skill in the art to modify or improve the surface of the ultrasonic horn of Isayev, et al. or Allan, et al. with the components or methods of Schembri, such that it is subjected to surface treatment or an adhesive improver such as maleic anhydride for the purpose of readily and effectively transmitting the ultrasonic energy to the resin.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. or Allan, et al. in view of Schembri and further in view of Hansen (U.S. 3,971,315). Isayev, et al., Allan, et al. and Schembri teach the characteristics previously described but do not teach that the resin composition is produced by mixing two or more thermoplastic resins and/or elastomers, wherein an interface is formed between the mixed thermoplastic resins, and one thermoplastic resin oozes like a feather into the other thermoplastic resin in the interface.

It is however, obvious that the apparatus is capable of producing such a composition, depending on the configuration of the extruder or injection molding apparatus. Furthermore, Allan, et al. state that ultrasonic vibration is known to improve the flow and distribution of the molding or resin material (paragraph 0002).

In addition, such resin compositions as claimed are also known. For example, Hansen teaches the formation of a thermoplastic resin composition, wherein two or more resins are placed in a mold and "ooze" or infiltrate one into the other at the resin interface (column 6, lines 15 – 30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of Isayev, et al., or Allan, et al. with the modification as taught by Schembri, such that a resin composition is produced wherein one resin oozes into the other like a feather at the interface depending on the final product desired and chosen by the manufacturer.

The Examiner is also noting that claim 19 is a product-by-process claim. As such, regardless of how the product is made, the product, being a resin composition, is a known product and thus, is not in and of itself novel. Per MPEP 2113, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. or Allan, et al. in view of Schembri and further in view of Takubo, et al. (U.S. 4,863,653).

Isayev, et al., Allan, et al. and Schembri teach the characteristics previously described but do not teach that the resin material includes maleic anhydride or a resin modified by maleic anhydride.

However, such resins are known adhesive resins and are further known to be resins which are extruded to form thermoplastic products.

For example, Takubo, et al. teach an extruder used to fabricate thermoplastic products, wherein typical resin materials used include a graft copolymer of maleic anhydride and polyolefin resins (column 4, lines 5 – 10).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Isayev, et al. or Allan, et al. with the components and methods of Schembri, further configured such that the resin includes maleic anhydride or a resin modified by maleic anhydride because such resins are known materials used to produce thermoplastic products, as taught by Takubo, et al.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isayev, et al. or Allan, et al. in view of Schembri and further in view of Rabeneck, et al. (U.S. 4,289,569). Isayev, et al., Allan, et al. and Schembri teach the characteristics previously described but do not teach that the surface of the vibration transmission member has been treated through sand-blasting.

Such a technique, however, is a known technique used to knurl or roughen an ultrasonic horn surface. For example, Rabeneck, et al. teach an ultrasonic horn used for

welding, wherein the horn is modified with a roughened surface. The roughened finish is produced via sand-blasting or other known techniques (column 8, lines 40 – 47). Furthermore, the roughened surface overcomes the tendency of the feedstock to spread laterally. If the horn remains with a smooth surface, the feedstock strands would displace laterally instead of consolidating. Thus, the rough or knurled surface of the horn adheres to the feedstock strands, ensuring the strands are consolidated into the seal nugget (column 8, lines 45 – 51).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of Isayev, et la. or Allan, et al. with the components or methods of Schembri, further configured such that the ultrasonic horn is treated via sand-blasted as taught by Rabeneck, et al. for the purpose of producing a knurled or roughened surface, which adheres to the feedstock being welded.

Response to Arguments

16. Applicant's arguments filed September 29, 2009 have been fully considered but they are not persuasive. Applicant's primary argument (similar to that previously presented) is that the one of ordinary skill would not find it obvious to modify the ultrasonic horn of Isayev, et al. or Allan, et al. with the elements as taught by Schembri. Applicant argues that Schembri discloses only an ultrasonic welding horn having a raised surface or surfaces (or other modifications including a concave/convex surface, deposited film surface) which allows the horn to focus the energy to selected portions of

the thermoplastic which need more energy, etc. Thus, Applicant concludes that such a modification would not be applicable to applying vibrations to a molten resin because Schembri does not specifically teach that the modifications to the horn exhibit high adhesive properties to the resin being worked upon or extruded.

Applicant also argues that a patterned or grooved horn (like that of Schembri) has the unexpected effect of increasing the adhesive properties of the vibrator or the vibration transmission member to the resin material and results in high quality molded articles having superior mechanical properties. The Examiner does not dispute that the resultant articles are of high quality; however, disagrees that the combination is improper and further disagrees that it is unexpected. Though Applicant is arguing unexpected results, the portions cited by Applicant in the arguments merely state that the articles exhibit a high quality without identifying specific tables or data. Upon a review of the specification, page 30, for example, displays data for several samples. If a horn with high adhesive properties (or a treated horn) produces a higher quality product, such a conclusion is not necessarily apparent from the table on page 30. Example 1 and 2, which provide data for the same resin composition and screw are good comparisons to review. With ultrasonic vibration and without a treated horn tip (example 1), the tensile elasticity is 720 MPa. Similarly, example 2 provides data for assumably the same horn, producing ultrasonic vibrations and with a surface treatment. However, the tensile strength is only 20 MPa higher and its charpy impact strength is only 3.4 J/m^2 different. The same type of differences can be seen between examples 4 and 5. Thus, the evidence does not seem to show such a difference in magnitude of the

strength characteristics that one may safely conclude that unexpected results have been obtained. The Examiner, therefore, still contends that a conventional patterned horn has been taken from one manufacturing environment and used in a different application; however, the horn remains the same.

One of ordinary skill in the art of ultrasonic horns or the use of such horns to impart vibration to any material would have the knowledge and skills necessary to improve the horn of Isayev, et al. with the modifications of Schembri. Applicant continually argues that the cited references fail to teach that the horn or the modifications thereof are for the purpose of exhibiting high adhesive properties to the resin. The modifications of the horn of Schembri are the same as that discussed by Applicant in the Specification (pages 9 – 10). The modifications which appear to improve the adhesive properties of the horn to the resin are surface treatment means, forming grooves or concave/convex portions, etc. which are all structurally taught by Schembri. Even though the horn of Schembri is for ultrasonic welding, such modifications translate to the use of the horn with molten resins because the combination of references teaches the structural elements as claimed. Furthermore, Schembri endeavors to solve a similar problem to that of Applicant's which is to improve the horn's affinity for a material, such that the horn's vibrations will fully transfer to the material. Likewise, by improving the adhesion of the horn’s surface to the resin (via surface treatment means or machining, etc.) one ensures that the vibrations will fully transfer to the resin.

In addition, Applicant seems to argue known elements which are already taught by the prior art, but which are now being applied to a different environment; however, such a different use does not render the horn patentable. Per MPEP 2112, "The discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977)." Therefore, even though Schembri does not specifically teach that the ultrasonic horn has high adhesive properties to a molten resin, Schembri teaches the structural elements as claimed and as discussed by Applicant in the specification and thus, renders the claims obvious as noted in the rejection above.

Even if the features of the horn of Schembri are used in the environment of ultrasonic welding, the horn of Schembri is equally applicable in the environment of extruding resin materials. The structural components of the horn are all taught by Schembri. Applicant has merely taken the structural components as taught by Schembri and applied the horn to a new use in the art of extrusion; however, one of ordinary skill in the art of ultrasonic horns or vibration member would have the knowledge and skills necessary to combine the reference of Schembri with that of Isayev, et al.

With respect to Applicant's remaining arguments regarding the dependent claims, the Examiner maintains the rejections as noted above.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA VERONICA D. EWALD whose telephone number is (571)272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVE

/Maria Veronica D Ewald/
Primary Examiner, Art Unit 1791